

# Memorandum

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Assignee: Monash University  
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Hadasit Medical Research Services and Development  
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Title: Embryonic stem cells

Inventors: Reubinoff et al.

Key Words: human embryonic stem cells, differentiation, feeder cells, fibroblast feeder layer

#### Short Summary of Technology (non-technical)

Fibroblast feeder layers are required in the culturing and maintenance of undifferentiated human (primate) embryonic stem cells. It was recognized in the prior art that it was necessary to test a preparation of feeder cells for its ability to support embryonic stem cell growth, in particular for their ability to support an undifferentiated phenotype of the stem cells. The present specification examined the properties of feeder cells that do not support an undifferentiated state and discovered that these feeder cells promote lineage specific differentiation of stem cells, in part by the factors produced by the cells. In contrast to the prior art which only search for feeder cells to maintain an ES cell in an undifferentiated state, the presently claimed invention identifies feeder cells that promote differentiation and use these properties in methods of differentiating human ES cells.

#### Impact statement

Provides methods and conditions for methods of isolating fibroblast feeder layers that affect the differentiation of human embryonic stem cells.

Sample claim

Claim 56: A method of modulating the differentiation of undifferentiated, pluripotent human embryonic stem (hES) cell in culture, comprising providing a fibroblast feeder layer which has been selected based on its ability to induce differentiation of undifferentiated, pluripotent human embryonic stem (hES) cells in culture, and growing said undifferentiated, pluripotent human embryonic stem (hES) cells on said fibroblast feeder layer, wherein said fibroblast feeder layer modulates the differentiation of said undifferentiated, pluripotent human embryonic stem (hES) cell in culture.